



DMH-142

HD Standalone Digital Modulator

HDMI to DVB-T Digital RF



User manual

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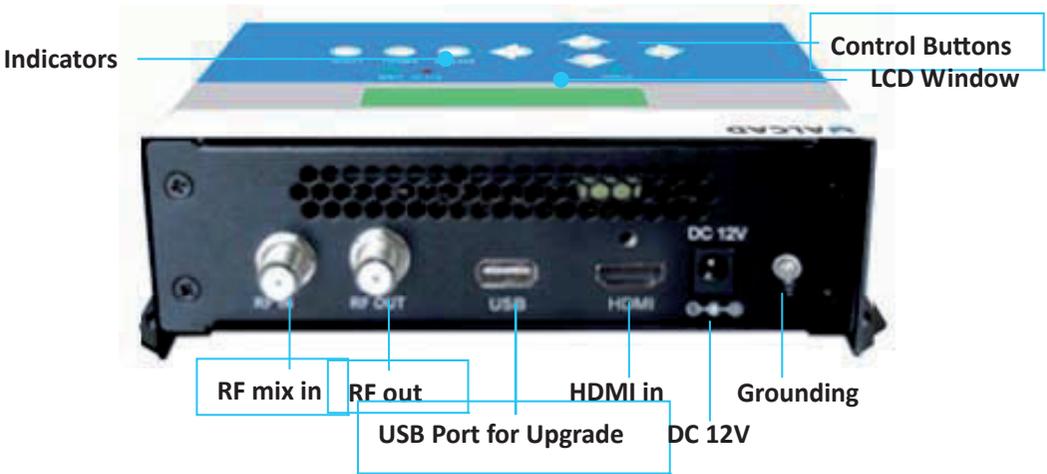
CHAPTER 1 Product Introductions

General Description

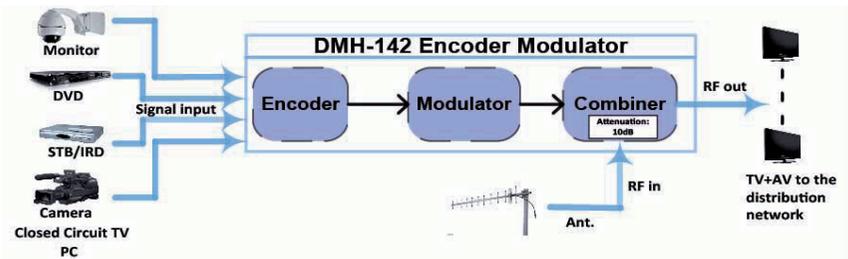
DMH-142 series HD encoder & modulator is ALCAD's consumer electronics which allow audio/video signal input in TV distributions with applications in home entertainment, surveillance control, hotel Digital Signage, shops etc.

It is an all-in-one device integrating MPEG-4 AVC/H.264 encoding and modulating to convert audio/video signals into DVB-T RF out.

The signals source could be from satellite receivers, closed-circuit television cameras, Blue-ray players, and antenna etc. its output signal is to be received by a DVB-T standard TVs or STBs etc.



Working Principle



Technical Specifications

HDMI Encoding Section			
Video	Encoding	H.264 MP@L 3.0/3.1/4.0	
	Interface	HDMI*1	
		Input	Output
	Resolution	480i@59.94/60FPS	480p@30FPS
		576i@50FPS	576p@25FPS
		720p@50/59.94/60FPS	720p@50/59.94/60FPS
		1080i@50FPS	1080p@25FPS
		1080i@59.94/60FPS	1080p@30FPS
		1080p@59.94/60FPS	1080p@30FPS
Aspect Ratio	16:9, 4:3		
Bit rate	1.000~18.000 Mbps		
Audio	Encoding	MPEG1 layer 2, MPEG-2 AAC	
	Sample rate	48KHz	
	Bit rate	64, 96, 128, 192, 256, 320kbps	
DVB-T Modulator Section			
Standard	DVB-T COFDM		
Bandwidth	6M, 7M, 8M		
Constellation	QPSK, 16QAM, 64QAM,		
Code rate	1/2, 2/3, 3/4, 5/6, 7/8.		
Guard Interval	1/32, 1/16, 1/8, 1/4		
Transmission Mode:	2K, 8K		
MER	•31dB		
RF frequency	142.5~858 MHz, 1KHz step		
RF output level	-14 ~ +6dBm, 0.1db step		
System			
Management	LCD + control buttons		
Language	English		
LCN Insertion	yes		
Upgrade	USB		
General			
Power supply	DC 12V		
Dimensions	183*110*50mm		
Weight	< 1kg		

CHAPTER 2 Safety Instruction and Installations

Safety Instructions



WARNING: Hot plug is not allowed since it may cause system halted.

To prevent fire or electrical shock, do not expose the device to rain or moisture.



The encoder modulator is powered with a voltage of 12V DC. The power supply voltage must not exceed the recommended voltage, which otherwise may cause irreparable damage to the device and the invalidation of the warranty.

Therefore:

- Do not replace power supply with a voltage greater than 12V DC.
- Do not connect the device to the power if the power cord is damaged.
- Do not plug the device into mains supply until all cables have been connected correctly.
- Do not cut the cord.



Avoid placing the device next to central heating components and in areas of high humidity.

Do not cover the device with elements that obstruct the ventilation slots.

If the encoder modulator has been kept in cold conditions for a long time, keep it in a warm room minimum 2 hours before plugging into the mains.

Mount the device in vertical position with the connectors located on the top side.

When replacement parts are required, be sure the service technician has used replacement parts specified by the manufacturer or have the same characteristics as the original part. Unauthorized substitutes may result in fire, electric shock or other hazards.

Safety check- Upon completion of any service or repairs to this device, ask the service technician to perform safety checks to determine that the device is in proper condition.

Installations



RISK of damage to the unit

Mechanically handling the unit may result in damage. Do not connect the unit to the power supply before or during assembly. Connect the unit as below instructed.



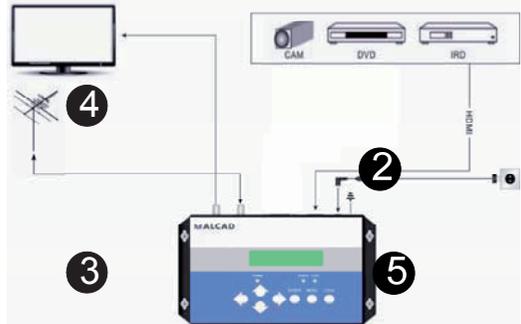
NO HOT PLUG AND CONNECT THE CABLE AS FOLLOWING STEPS.

1. Mount and tighten the screws and plugs to secure the unit to the wall. Left 10 cm of free space around from each unit.

2. Connect the signal input in the respective connectors. The signal source can be from a surveillance monitor, DVD, set-top box, CCTV and etc.

3. Optionally, connect the loop-through RF input coaxial cable.

4. Connect cable to RF output to STB/TV.



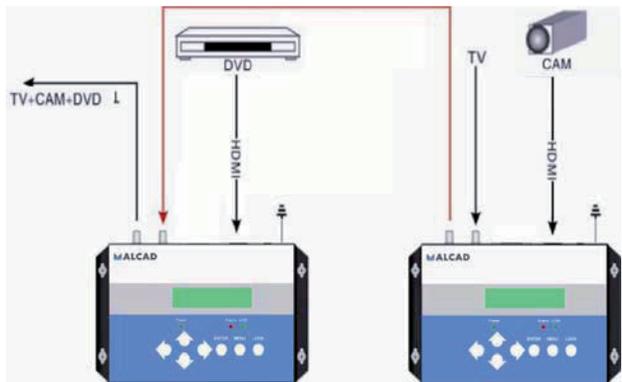
5. Power supply connection: a) Connect the earth cable; b) Connect the power plug to the unit mains connector; c) Connect the power plug to the mains socket.

Cascade Installation

DMH-142 unit has 1 TV signal to RF output encoded as DVB-T Digital TV signal.

Several DMH-142 units can be cascaded in order to increase the capacity.

The maximum capacity of a series of N units is 1xN incorporated TV signals. To cascade 2 or more units, connect the RF output of the preceding unit to the TV input (loop-through) of the next unit (see right illustration).



Typical Applications

...for communities of residents
an information channel on their television



...for restaurants
information about daily menus, special deals, etc



...for hotels
meeting rooms exhibitions, message, etc



...for hospitals
training courses, healthy guide, etc



...for public spaces
advertising, user information, news, etc



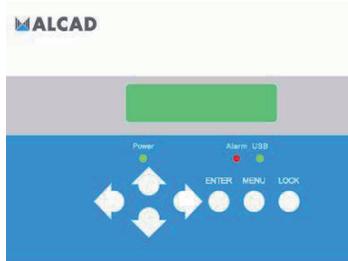
...for shopping centres
new collections, special deals, etc



Create your own advertising and information channel using only your DMH-142 Digital Modulator

CHAPTER 3 Operations and Management

DMH-142 is controlled and managed through the key board and LCD display.



LCD Display – It presents the selected menu and the parameter settings. The backlight in the display is on when the power is applied.

LED – These lights indicate the working status

- Power: It lights on when the power supply is connected.
- Alarm: It lights on when there is error, such as the signal source loss.
- Lock: It lights on when the signal source connected and goes off when the signal lose.

Left/Right/Up/Down buttons – Use these buttons to turn the screen pages, shift the target items by moving the triangle, or change the parameter settings in the program mode.

Enter – Use this button to enter a submenu or save a new setting after adjustment; press it to start adjusting the value of certain items with Up/Down buttons when the corresponding underline flash;



Press it to activate the hidden selections and change the setting with Up/Down (or Left/ Right) buttons.

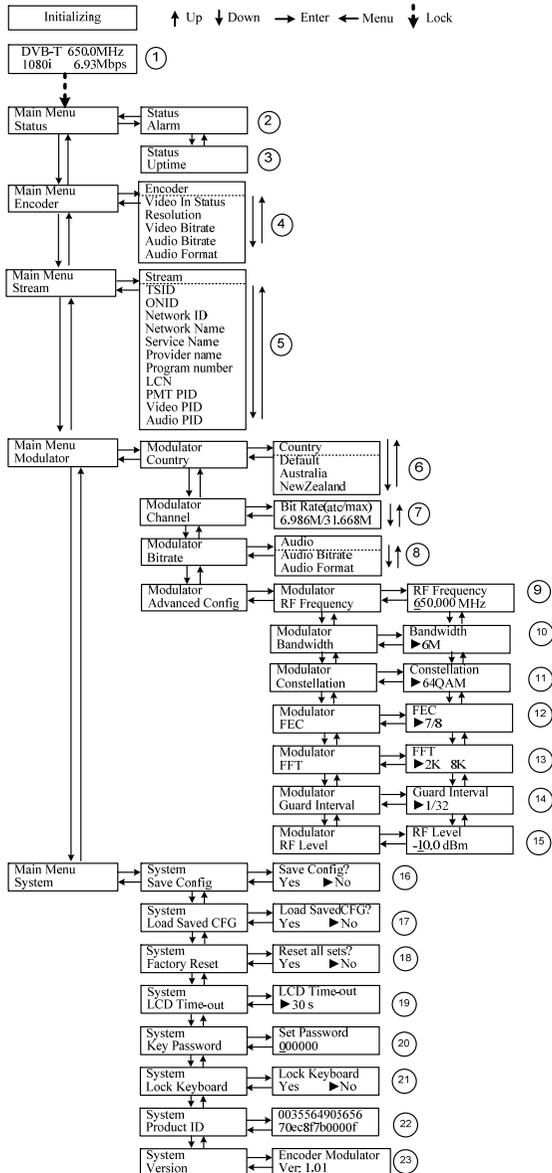


Menu – Press this button to step back

Lock – Locking the screen / cancelling the lock state, and entering the main menu after the initialization of the device. After pressing lock key, the system will question the users to save present setting or not. If not, the LCD will display the

current configuration state.

When the power is connected, the LCD will start to initialize the program. The LCD menu goes as below chart.



- 1) DVB-T: modulating standard; XX.XXX MHz: the current output frequency; 1080i: video resolution of signal source; X.XX Mbps: the current encoding bit rate
- 2) Alarm Status: For example, if the signals lose, it will give alarm and display error type under this menu. For example: *Video 1 Not Lock*
- 3) Uptime: It displays the working time duration of the device. It times upon power on.
- 4) Encoder Parameters: User can enter the items respectively to set Encoder parameters. **Video in Status**: User can view the video status under this menu. **Resolution**: signal source resolution, read-only. **Video Bit rate**: adjust in the range of 1.000~18.000 Mbps. **Audio Bit rate**: Select audio bit rate among 64, 96, 128, 192, 256, 320kbps. **Audio Format**: Select audio format among MPEG2, MPEG2-AAC.
- 5) Stream: User can view or adjust TSID, ONID, Network ID, Network Name, Provider Name, Program number, LCN (Logical channel number), PMT PID, Video PID and audio PID after enter this menu.
- 6) Country: User can choose country under this menu. There are three options Default, Australia or New Zealand. If user chooses Default, modulating parameters need to be set manually through advanced configuration. If choose other two, user do not need to set RF frequency, Bandwidth, Constellation, FEC, FFT, Guard interval and RF Level. It will configure automatically according to the Country. It is a shortcut.
- 7) Channel: User can choose Channel under this submenu.
- 8) Bit Rate: User can read the current modulating bit rate and the maximum bit rate
- 9) RF Frequency: Adjust it at range of 142.5 MHz to 858 MHz. Set it according your regional situation or inquire your local services.
- 10) Bandwidth: choose between 6M, 7M and 8M.
- 11) Constellation: DVB-T modulator contains 3 constellation modes – 64 QAM, QPSK and 16 QAM.
- 12) FEC: Forward Error Correction rate. It contains 1/2, 2/3, 3/4, 5/6 and 7/8.
- 13) FFT (Transmission Mode): Select between 2K and 8K.
- 14) Guard Interval: Select among 1/32, 1/16, 1/8 and 1/4.

15) RF Level: Adjust it at range of -14~ +6dBm.

➤ **NOTE:** The different combination of bandwidth, constellation, guard interval and FEC (code rate) will form a different output code rate. Please refer to appendix table 2. To ensure the output image quality, it is required the output code rate to be higher than 22 MHz.

16) Save Config: Yes/No-to save/give up the adjustment of setting.

17) Load Saved CFG: Yes/No-to load/ not to load the saved configuration.

18) Factory Reset: Yes/No-choose/not choose the factory's default configuration.

19) LCD Time out: A time limit that LCD will light off. Choose among 5s, 10s, 45s, 60s, 90s and 120s (seconds).

20) Key Password: to set a 6-digit password for unlocking the keyboard.

21) Lock Keyboard: Choose Yes to lock the keyboard, then the keyboard will be locked and cannot be applicable. It is required to input the password to unlock the key board. This operation is one-off. (Password forgotten, please use the universal code "005599".)

22) Product ID: User can view the serial number of this device. It is read-only and unique

23) Version: It displays the version information of this device. *Encoder Modulator:* the name of the device; *Ver:* version number of this device.

CHAPTER 4 How to Upgrade

DMH-142 encoder modulator is embedded with USB Port for upgrading. The supported file format is IMG.



USB Port for Upgrade

Upgrade steps: Insert USB device•Upgrade automatically(It will need 10-20 seconds to upgrade. After upgrade, DMH-142 will reboot automatically.)
•Remove USB device•Power off•Power on.

Appendix

Modulation Constellation	FEC	6MHz Bandwidth				7MHz Bandwidth				8MHz Bandwidth			
		Guard Interval				Guard Interval				Guard Interval			
		1/4	1/8	1/16	1/32	1/4	1/8	1/16	1/32	1/4	1/8	1/16	1/32
QPSK	1/2	The weak ability of error-correcting and anti-interference in this area										6.03	
	2/3				6.03	5.80	6.45	6.83	7.03	6.64	7.37	7.81	8.04
	3/4		6.22	6.58	6.78	6.53	7.25	7.68	7.91	7.46	8.29	8.78	9.05
	5/6	6.22	6.91	7.31	7.54	7.25	8.06	8.53	8.79	8.29	9.22	9.76	10.05
	7/8	6.53	7.25	7.68	7.91	7.62	8.46	8.96	9.23	8.71	9.68	10.25	10.56
16QAM	1/2	7.46	8.29	8.78	9.04	8.70	9.67	10.24	10.55	9.95	11.06	11.71	12.06
	2/3	9.95	11.05	11.70	12.06	11.61	12.90	13.66	14.07	13.27	14.75	15.61	16.09
	3/4	11.19	12.44	13.17	13.57	13.06	14.51	15.36	15.83	14.93	16.59	17.56	18.10
	5/6	12.44	13.82	14.63	15.08	14.51	16.12	17.07	17.59	16.59	18.43	19.52	20.11
	7/8	13.06	14.51	15.36	15.83	15.24	16.93	17.93	18.47	17.42	19.35	20.49	21.11
64QAM	1/2	11.19	12.44	13.17	13.57	13.06	14.51	15.36	15.83	14.93	16.59	17.56	18.10
	2/3	14.92	16.58	17.56	18.09	17.41	19.35	20.49	21.11	19.91	22.12	23.42	24.13
	3/4	16.79	18.66	19.76	20.35	19.59	21.77	23.05	23.75	22.39	24.88	26.35	27.14
	5/6	18.66	20.73	21.95	22.62	21.77	24.19	25.61	26.39	24.88	27.65	29.27	30.16
	7/8	19.59	21.77	23.05	23.75	22.86	25.40	26.89	27.71	26.13	29.03	30.74	31.67

Table 2 Recommended MPEG-2 Code Rate